

perature about 60-70°F (15-21°C).

The gypsum or lime treatment should be given about 3 times during the growing season for best results. Your plants will respond to this treatment by initiating new side buds and parent plants will grow larger and leaves will become thicker. I also notice that plants will respond to light sprayings of fertilizer solution such as fish emulsion or a weak dilution of Miracid® at about 4 month intervals during the growing season. Pollination of the large flowers is fairly easy to do. I slip the flat end of a toothpick inside the topmost portion of the funnel and scrape the pollen across the pistil on the way out. Capsules yield many seed when mature.

JOHN WATKINS (98 Earls Court Rd., London W8 6EG, England) reports that in his short note in the December, 1978 CPN (CPN 7 : 117-118), that the correct spelling for the butterwort is *Pinguicula lusitanica*, not "lusitanicum". Also, the CARNIVOROUS PLANT SOCIETY based in Great Britain has a new secretary to whom all requests for information, membership, etc. should be directed: Eric Binstead, 13, Grange Farm Road, Ash, Aldershot, Hamps., GU12

6SJ, ENGLAND. We have been following the activities of this organization through bulletins, minutes and its journal and all CP enthusiasts in Great Britain are urged to join this interesting and active group.

John also has noted that if a young plant of *Drosophyllum* topples over so that the stem is parallel to the ground (Ed: as frequently happens!), it will sprout shoots at each leaf node at right angles so that they will be perpendicular to the soil surface. However, rooting does not take place at these points. If the plant remains vertical, it will likely flower the second year and then probably die.

R. DOUGLAS WIGGINS, JR. (5834 N.E. Everett St., Portland, OR 97213) writes: I have been cultivating wingless fruit flies for carnivorous plant feeding; I find that the plants are vastly more vigorous with the additional food. However, it is often necessary to kill the fruit flies with CO₂ gas (difficult) or ether to insure that they do not crawl away from immature plants. I will offer cultures or wingless fruitflies and culture supplies for mail order sale. Write me for more information.

Short Notes

THERE'S NO TRICK TO GROWING UTRICS Part 1: Terrestrial Species

by Bob Hanrahan

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If someone asked you to name the fastest-moving carnivorous plant in the world, what would be your answer? Most likely you would say *Dionaea muscipula* or the Venus' Flytrap. Wrong! The correct response would have been to say *Utricularia* or the closely related genus *Biovularia*. Both of these genera are

members of the family Lentibulariaceae. Now, can you name the other members of this most unusual family? Here's a hint: depending on the botanist, there are either 4 or 5 genera in this family. In case you have forgotten, they are *Biovularia*, *Genlisea*, *Pinguicula*, *Polypompholyx* and *Utricularia*. Many profession-

al botanists classify the two species of *Biovularia* as *Utricularia*, as the taxonomical differences are minimal.

As a family, the Lentibulariaceae encompass over one-half of all known CP species. Of the 250-plus species in the family, less than a dozen are commonly found in collections; of the lucky dozen, only one or two *Utrics* are generally included. This is really unfortunate for the genera as well as the collector. Terrestrial *Utrics* are the easiest of all the carnivores I have ever cultivated (here at WIP).

There are most likely less than ten collectors in the world who tend to specialize in these easy-to-grow plants. Possibly the reason for their apparent unpopularity is the scarcity of printed material to explain their culture and hidden flower charms. It is the intent of this short note to make a small dent into the forbidden and lost world of *Utricularia* information.

To simplify the process in helping you get started in cultivating *Utrics*, I will provide in an outline form the basic growing factors that have been successful for me. I do not in any way profess to be an expert on their culture, just a dedicated amateur who has taken an interest in their superior trapping mechanism. Also, as an amateur botanist, I won't go into the complexities of the mechanical operation of the bladders or traps; this is best left to professional botanists such as Lloyd or Taylor.

SOIL MEDIUM: For the most part, *Utrics* are not too fussy about their growing medium. The most important consideration is to provide a medium that maintains a high degree of moisture at all times. I have found a simple mix of shredded long fiber moss and Canadian peat moss to be acceptable for nearly all varieties I have worked with. A 2-to-1 mixture of peat moss and fine sand or a shredded moss, peat moss and sand combination can be used. Live sphagnum

moss is a preferred medium for the larger-growing species. Avoid live moss for the smaller varieties, as the moss quickly overgrows the plants and blocks out any available sun or artificial lighting. When acquiring a new species that I am totally unfamiliar with, I always try to gain as much information as possible about the area to which it is native. I then try to duplicate the natural soil conditions. After providing the closest approximation I can in soil structure, I then start some propagated plants out in a variety of soil mediums to determine if one is best. Usually, the results are the same and I determine that anything will work if other factors are maintained properly.

WATER LEVELS: As a rule, terrestrial *Utrics* are found only in wet or soggy locations. Some of the species are native to habitats that dry out periodically and have adapted to this alternation of water levels. Under normal light levels, the soil should be kept quite moist to soggy during the active growing seasons with pure water, low in mineral salts.

LIGHT: I believe home culture of *Utrics* is best with low light levels (less than 2,000 fc). This is about $\frac{1}{4}$ to $\frac{1}{5}$ full sunlight on a clear day. I grow all of my species under greenhouse benches or along various levels of the vertical six level growing systems within the greenhouses. Indoor culture under fluorescent lighting is ideal as intensity levels generally never exceed 500 to 1,000 fc. Any of the commercial lamps (cool white, daylight, vitalight, etc.) will work equally well. The special indoor plant lights will provide a wider spectrum of light for your plants, but the cost of each lamp is greater than for a simple cool white unit. A very inexpensive way to provide the red and infrared portion of the spectrum is to place a small incandescent lamp (4 to 15 watts) near the growing plants. Be careful to monitor heat buildup as incandescent lamps do put out additional

heat. In any event, experiment with various light levels for your growing conditions.

TEMPERATURES: Ideal growing temperatures are between 22 and 30 degrees C. for all of the species I have had experience with. I let the nighttime temperature fall 5 to 10 degrees C. depending on species. As an optimum temperature for all varieties, a daytime maximum of 27 and a nighttime low of 18 could be considered ideal during the summer months. Winter growth at 15 to a low of 8 can be tolerated by nearly all species. I have had a number of the tropical species take a frost quite well with little or no damage. Remember, these are not delicate carnivores like a number of the *Droseras* or *Pinguiculas* that require precisely controlled conditions. Consider a number of the species like weeds; once you have them, they are difficult to eliminate if conditions are maintained properly.

HUMIDITY: *Utricularia* require an abundance of humidity like most fellow CP. When grown wet like they should be, humidity is generally no problem due to the evaporation of surface water in their soil medium. Humidity levels of 40 to 90% is adequate for all species.

DORMANCY: Aside from a few species, my *Utrics* as a rule do not require as true a dormancy as many of the temperate *Drosera*. However, I have found that they do slow down and produce fewer leaves during the shorter winter months. *U. menziesii* dies back to its small corm during the dry season, which is a form of dormancy.

CONTAINERS: These plants can be grown in anything. However, I have noticed a preference for a light-colored container or one that permits light to penetrate into the soil. If grown in an aquarium or jar, the root system will huddle along the sides of the glass and propagate

all along the margin. This is ideal as the bladders which form on the roots are clearly visible. For the most part, a small 2 to 3 inch container or pot is more than sufficient to provide for their needs.

TRANSPLANT REQUIREMENT: One of the most important facts about *Utric* culture is the nearly yearly transplant requirement. This is a vital trick I first learned about from Carl Forst, a long time *Utric* collector. It seems that once a culture flowers and fills its growing containers, it seems to decay slowly and die. Therefore, simply start out a new batch in a new pot with fresh soil and let the cycle repeat itself.

PROPAGATION METHODS: Here's where the fun starts. Just take a few leaves, roots and bladders and insert them into some fresh soil. Follow the other factors, and you're into *Utrics*. It's really that simple. They proliferate so fast from stolons that I have just about forgotten about other methods. I have leaf propagated them as well as from seed. But, by far the easiest and fastest is by the subculture method of division. If you receive or generate seed (which I have not found easy with some species), just start them out on a moist medium and keep them fairly warm — 25 to 30 degrees C. — and wait for germination. Some species will germinate in a month, while others have taken up to a year.

UTRIC AVAILABILITY: Being a mystery genus, *Utrics* are not grown by most commercial plant nurseries because they are not in demand and cannot justify their expense when more lucrative crops can be produced in the same greenhouse. A few of the CP specialty nurseries do sell them, and generally at a modest price. I suggest that you try to contact another CPN'er who has a few species and who will help you get started. Since they do grow so fast, any true *Utric* collector will surely be glad to unload his surplus

plants in trade or as a pure donation to help you get started. The old myth of showing off one's growing talents by hoarding certain species of plants and trying to maintain the "only one in the world" is certainly old-fashioned with today's new CP ideals, as set forth by CPN and a few of the commercial companies.

TERRESTRIAL *UTRICULARIA* SPECIES OF INTEREST (most desirable first)

1. *U. longifolia*. This is one of the largest and finest species. Produces large showy leaves up to 30 cm in length. Flowers large, up to 2 to 3 cm across with purple/lavender and yellow markings. Flowers with some difficulty. Grow very wet in the fall/winter period and let dry out slowly during the spring. Best grown in or with *Nepenthes* in tropical greenhouse situations.

2. *U. sandersoni*. Amazing little plant which produces an abundance of flowers which resemble a little "Bunny Rabbit". First popularized in the U.S.A. by CPN seed exchange coordinator Patrick Dwyer. Grown in similar environment as *D. capensis*. Very easy to maintain.

3. *U. pubescens*. A small species that produces small round umbrella leaves. A low grower that quickly covers a terrarium with its unusual leaves. Flowers are lavender, produced in the spring/summer growing period.

4. *U. tricolor*. A South American species that is easy to cultivate. Leaves are dichondra shaped and about 1 cm in diameter. Although I can guess why it is called tricolor, it has never flowered for me in over five years.

5. *U. dusenii*. A giant South American relative of *U. tricolor*, this species will produce a large (3-4 cm) leaf if grown

under very low light levels and with a lot of water. Prefers to be partially submerged once established. Will grow up to 10 cm in height.

6. *U. prehensilis*. About the easiest species to cultivate. Produces a profusion of pretty little yellow flowers on twinning stems. Grows best in live or long fiber sphagnum moss.

7. *U. praelonga*. An interesting species that forms a variety of leaf shapes; short basal and long ribbon leaves to 15 cm. Likes to be submerged with water during the summer months to help support the long narrow leaves.

8. *U. calycifida*. Another of the *U. longifolia* variety. Smaller and more compact growth to 10 cm. Grow drier than *U. longifolia* but in the same medium, preferably live sphagnum moss.

9. *U. racemosa*. An Asian species that grows easily in any wet situation. Typical small leaved species.

10. *U. menziesii*. A rare and difficult to obtain species in the U.S.A. Native to western Australia. Forms a dormant corm in nature during the dry season to sustain it throughout the year. Best grown for me in vermiculite/peat mix. Let dry out during the winter months.

11. *U. dicotoma* and *U. novae-zealandica*. Similar species of easy growth. Nice lavender flowers readily produced in the spring to summer months.

12. *U. subulata* complex (*U. cornuta*, *U. juncea* and *U. subulata*). American species of very easy growth. Produces abundant seed that can quickly contaminate other nearby containers. Depending on species, yellow flowers with or without a long spur are produced during the spring to early summer.

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